

## The Macalester Review

---

Volume 3

Issue 2 *Volume 3 Issue 2*

Article 5

---

6-2-2013

# Effects of Western Imposition and Climate Change upon the Koyukon Environmental Identity

Sonja Meintsma

*Macalester College*, [smeintsm@macalester.edu](mailto:smeintsm@macalester.edu)

Follow this and additional works at: <http://digitalcommons.macalester.edu/macreview>



Part of the [Arts and Humanities Commons](#), and the [Social and Behavioral Sciences Commons](#)

---

### Recommended Citation

Meintsma, Sonja (2013) "Effects of Western Imposition and Climate Change upon the Koyukon Environmental Identity," *The Macalester Review*: Vol. 3: Iss. 2, Article 5.

Available at: <http://digitalcommons.macalester.edu/macreview/vol3/iss2/5>

This Article is brought to you for free and open access by the DigitalCommons@Macalester College at DigitalCommons@Macalester College. It has been accepted for inclusion in The Macalester Review by an authorized administrator of DigitalCommons@Macalester College. For more information, please contact [scholarpub@macalester.edu](mailto:scholarpub@macalester.edu).

## Effects of Western Imposition and Climate Change upon the Koyukon Environmental Identity

By Sonja Meintsma

### *Introduction*

Rural Alaska is thought of as pristine, beautiful, and vacant: a land that is home to wild animals and barren landscapes, dominated by powerful weather and unknowable events. However, this landscape is not vacant but rather inhabited by a distinct and diverse group of peoples. Rural Alaska is home to several Indigenous Native peoples: Native American Indians and the Eskimo/Inuit. Indigenous peoples have been living off of this rural northern tundra for thousands of years, surviving by hunting, fishing, and gathering. In fact, Indigenous peoples have reacted against labeling the Arctic as a 'frontier' or a 'wilderness,' calling instead for recognition of the Arctic as their 'indigenous homeland' (Nuttall 1998: 87). Native Alaskans depend upon this land to survive. It provides them with food and sustenance, but also with something even more imperative: a sense of identity. This paper will discuss a certain group of Native Alaskan Indians, known as the Koyukon Athabaskans. This paper will demonstrate how Koyukon Indians survive off of the land, from which they derive their identity. This identity is defined through hunting and by the notion of reciprocity between animals, the environment, and human beings. It will further be argued that this "environmental identity" has been impacted largely by imposition from the West and is continually threatened by adverse consequences of climate change.

### *Background*

The Koyukon are the northwestern most tribe of the Athabaskan Indians, situated near the Koyukon and Yukon rivers where they have lived for thousands of years. The three main villages of the Koyukon—Huslia, Nulato, and Koyukuk—have an average population of 100-350 people. According to records, only 1,000 people live within the 26,000 square miles of the Koyukon territory, resulting in a very low population density (Watson & Huntington 2009: 260). Thus the Koyukon people are a

traditionally isolated group of people, living and surviving off of the land by hunting, fishing, and trapping—techniques that have been passed down for thousands of years. Koyukon hunt a large variety of animals throughout the annual cycle, including rabbit, muskrat, beaver, fox, lynx, otter, wolf, wolverine, ptarmigan, geese, duck, salmon, pike, whitefish, black and brown bear, moose, and caribou (Loyens 1966: 36). They follow a seasonal-migration pattern: hunting caribou in the fall, participating in long-distance trade, ice-fishing and occasionally hunting big game in the winter, hunting caribou and bear in the spring, and fishing for salmon and whitefish during the summer (Hosely 1980: 13).



Image 1: Map of Koyukon Territory

### *Methodology*

Throughout this paper, I rely primarily on secondary resources, having done research about the history and the present situations of the Koyukon people. I began with a specific topic in mind: how identity is defined through interaction with the environment and the land. My research goal was fairly narrow—however, I was able to find ample resources for this topic both from the modern time period as well as from an historical perspective. I believe that this research can be helpful in understanding how cultural identity is formed and how it is impacted due to external events.

### *The Environmental Identity*

The Koyukon derive what I will term their *environmental identity* through a unique relationship with their natural surroundings. They depend upon their surroundings to survive, and thus have developed a meaningful relationship with the animals and the environment with which they share their homeland. The Koyukon share a reciprocal relationship with nature founded upon the belief that the environment is both a natural and a supernatural realm. They believe that every part of nature is aware and has a power, and all events that occur within nature are manifestations of that power. Consequently, all action towards nature must be sensitive and respectful. It is upon this basis that the Koyukon have created their system of taboos or *hutlane*—an elaborate code of respect and morality—without which it is believed their survival would be in jeopardy (Nelson 1983: 31). Nuttall elaborates on this concept by stating that, “From the perspective of the [Indigenous] hunter, there is no distinction between nature and society, and an understanding of animals and the environment is fundamental to the understanding of the hunter’s notion of the self,” while he is speaking broadly, this quote pertains quite well to the Koyukon specifically (Nuttall 1998: 85).

Koyukon belief is based upon an animistic system—a system of belief that imputes life or spirit to things that are inert. For example the Koyukon believe that wind, weather, and water have human qualities to them, that they have an agency and life. Likewise, animals are referred to as verbs rather than nouns, creating an imagery of life even by the mere mention of their name such as “streaking like a flash of fire through the undergrowth” in place of simply ‘fox’ (Ingold 2006: 9, 14). This imagery exemplifies the representation of the animals as free agents within Koyukon ideology.

In his book *Make Prayers to the Raven*, Nelson provides his readers with three main tenets of Koyukon Ideology. I believe these tenets provide a useful explanation which creates a fundamental understanding of the environmental identity. He writes that first we must understand the basic assumption that the natural and supernatural worlds are inseparable—each is intrinsically a part of the other and once we understand that, we can identify the three main precepts.

The first precept is that Distant Time stories provide an explanation for the origin, design, and function of nature along with the human relationship to it (Nelson 1983: 226). Koyukon author Catherine Attla, one of the most renowned Native writers of the 20th century, has written extensively on their Distant Time stories and reiterates this canon. These stories provide readers with a plethora of information about the values of the Koyukon such as an admiration of quick thinking and hard work, the importance of cooperative relationships, and compassionate treatment of others (Attla 1996: 646). These Distant Time stories are told during the long winter months, always ending with the statement: “I thought winter had just begun, and now I’ve chewed off part of it” (Attla 1983: 85). These stories represent a body of knowledge that provides moral, spiritual, and social rules for ethical living and reflect an ancient time when animals and humans were more alike than different. These stories tell that before animals were transformed to their present form, they were identical to humans. It is said that due to this past, animals retain the ability to understand human speech and behavior even today and thus can be offended by it (Nelson 1983: 20). An important character that exemplifies this trait is the Raven, the creator of the Koyukon world. Raven is a trickster character and is seen as greedy and selfish but also extremely clever and witty. He is a powerful character, but also petty and conniving (Attla 1996: 646). Today the Raven is still held in high esteem—one Koyukon says that “It’s just like talking to God, that’s why we talk to the raven. He created the world,” (Nelson 1983: 83). As is implied here, humans may “make prayers” to the animal and nature spirits, asking them for protection, luck, or good health (Nelson 1983: 93, 28). The stories of the Distant Time provide us with a deeper understanding of the moral and ideological basis of social life, while also drawing a deep connection with the importance of the natural world and the spirits that are embodied within it (Easton 2001: 106).

The second precept explains that natural entities are endowed with spirits and with spiritually based power. Consequently, the Koyukon are never truly alone. Their natural surroundings are aware and personified, and may become offended as indicated by the explanation above. Therefore, the Koyukon

must be hyper-aware of their interactions within their natural surroundings, being sure to treat the nature and animal spirits with respect (Nelson: 1983: 226, 14). This respect is demonstrated by adherence to the *huttanee*, rules that guide one's behavior toward an animal or any other living or non-living thing (Watson & Huntington 2009: 260). If proper respect is not shown to the environment and everything in it, the offended spirit may exact revenge by imbuing the offender with bad hunting luck or ill health (Loyens 1966: 91). Therefore it can be extremely dangerous to offend a spirit, as it may result in loss of status, starvation or even death. As a result, the Koyukon accept the fact that they are never in control of nature, but more importantly, they have no desire to control it (Aftandilian 2011: 224). Furthermore, natural events that affect one's life are seen as to have been caused or influenced by human actions. The concept of random events has little bearing with the Koyukon. Things happen for a reason, usually due to an offended or angry spirit (Nelson 1983: 225).

Lastly, it is known that humans and natural entities are involved in a constant spiritual interchange that profoundly affects human behavior (Nelson 1983: 227). Consequently, nonhumans have a great amount of agency which imbues the environment and the entities within it with "ultimate power," (Watson & Huntington 2009: 271). And because human action is thought to exact direct responses from the nature spirits, Koyukon people are constantly aware of their environment and their place within it (Natcher et al. 2007: 121). Therefore, due to the spiritual interchange between the sentient and human world, the Koyukon draw several parallels between proper religious action and success in hunting/subsistence activity. If one does not treat a spiritual entity with respect, one may be cursed with bad luck. Regardless of a person's skill, with the absence of luck, there is no destiny except failure (Nelson 1983: 225, 26). One important method of retaining hunting luck is respecting the animal during a hunt. Hunting is a practice of the ethical relationship with the nonhuman and one must follow strict rules while in the process of the hunt. The hunt reflects the social relations between hunter and hunted and these spiritual relations demonstrate an ontology and ethics unique to the Koyukon people. The

Koyukon believe that hunters do not “take” anything from the natural world—rather, animals choose to give themselves to the hunter as a gift. As a result, it is essential that the hunter properly respect the sacrifice of the animal by accepting the gift, placing themselves in the animal’s position (thinking as the animal might), and properly disposing of the body. Thus, it is an accepted canon that the animals are in control of the hunt, not the humans, and that the animals wish to “give themselves” to the hunter (Watson & Huntington 2009: 257, 259, 162). Here, we can see that animals are given agency in stark contrast to Western conceptions about animals where the animal is seen as impoverished and vulnerable—the victim.

We can see here that the Koyukon environmental identity is founded upon the three main precepts set forth by Nelson in his book *Make Prayers to the Raven*. First, Distant Time stories explain the basics of the human-spiritual relationship. We further see that this relationship is complex and interdependent and that Koyukon must respect their surroundings or suffer dire consequences which can impact every aspect of life.

### *Impacts of the Western World*

Like many Native American or Inuit cultures, the Koyukon have been heavily impacted and ultimately changed by the imposition of Western culture upon their traditional ways of life. The first major relations with the West came to the Koyukon in the early 19<sup>th</sup> century, beginning the process of acculturation. Acculturation is the “process which takes place within a culture, a population, or a social system, in response to the impact of stimuli from other cultures or populations,” (Loyens 1966: 2-3). For the first few decades, acculturation was relatively benign. However, by the late 19<sup>th</sup> century imposition from the West began to take on a new fervor with the arrival of Jesuit missionaries to the area. Likewise, as trade and trading centers grew in popularity and as availability of new conveniences became more widespread, the Koyukon increased their participation in and reliance upon the Western economic system, creating profound changes within their traditional culture such as increased dependence on

store-bought foods and a greater desire for monetary wealth. Thus, throughout the so-called the “colonial period” from 1898-1960, Koyukon culture was characterized by a convulsive change, resulting in profound fragmentations between traditional ways of life and modern, Western modes of life (Burch Jr. 1979: 135). By the early 20<sup>th</sup> century, permanent settlements had been established in the Koyukon region. This transition is attributed to technological innovation that allowed permanent residence due to greater mobility and making work more efficient (Loyens 1966: 122, 123). Permanent settlements made it easier for white culture to greatly influence traditional culture: creating social change through the Western economic system, the imposition of Westernized education, and the Catholic religion.

The encroachment of the Catholic religion upon traditional spiritual belief profoundly changed Koyukon culture. Pressures from missionaries such as Jules Jetté created instability and skepticism about the powers of shamans and the sentient world. Likewise, changes in the economic sphere and improved technologies undermined the notion of “luck” when out hunting or trapping. Furthermore, the emphasis on Western education undermined notions of the spiritual reciprocity between the natural world and humans. Overtime, food taboos and puberty customs began to die out, as did traditional ceremonies (Loyens 1966; 183, 185, 192). However, when allowed by the Catholic Missionaries, the Koyukon retained their traditional practices and cultural precepts such as the emphasis on sharing and some aspects of the ceremonial cycle such as potlaches and Feasts for the Dead, (Loyens 1966: 200). Nevertheless, while Catholicism and impacts of the Western mode of life drastically changed the Koyukon culture, certain aspects of Koyukon belief remained persistent. For instance, there has been a revival of traditional ceremonies and a re-emergence of traditional spirituality since the end of the colonial era in 1960.

While Catholicism has decreased overall adherence to traditional lifestyles and belief systems, such as declining rates of ceremonies that revolved around seasonal migration patterns and use of traditional material, the environmental identity is still evident in Koyukon culture today. However, this is



not to say that it has not undergone some transformation. For instance, hunting today is much less ubiquitous that it was in the past. This is mainly because hunting, trapping, and fishing are no longer the only source of food for the Koyukon and they rely less on these subsistence strategies today than they once did. Trapping is no longer a way of life, instead it supplements store-bought food. Hunting has also declined, particularly within younger generations, and it is now enjoyed more as a sport than a mode of survival. This instrumental change has been brought upon for the most part due to the transition into a Western economy, which has created a need for secure employment within the American economic system rather than allowing for a continuation of subsistence living (Loyens 1966: 218-221). However, hunting continues to be a vital resource, providing supplemental food when store-food becomes too expensive. Loyens writes that “life in Nulato remains possible only as long as the local environment is intensively exploited. However, the search for employment renders the traditional food quest less feasible and thus stimulates a greater dependence upon cash income to satisfy new wants and desires” (Loyens 1966: 226). Therefore, the Koyukon continue to exploit their environment through hunting, fishing, trapping, and berry picking as well as depending on store-bought food. Furthermore, the average income of Huslia—a Koyukon village—is \$28,343 per household according to a US census in 2000. This low income necessitates the continued use of subsistence strategies—according to the same census, over 1,000 pounds of wild foods are harvested per family annually in the same village (Natcher, et al. 2007: 116). However, there are some restrictions placed upon hunting which further threaten the traditional way of life such as hunting bans and restricted seasons which can result in heavy fines and confiscation of guns, meat and even boats if disobeyed (Watson & Huntington 2009: 261). Likewise, environmentalist groups and animal rights activists further exacerbate threats to subsistence survival. While subsistence living has been challenged within the last century or more, it continues to play an important role in the survival of the Koyukon community, and thus continues to reinforce the environmental identity today.

Aside from impacting the spiritual domain and subsistence strategies, impositions from the Western world have also heavily impacted other aspects of Koyukon culture. For instance, the use of Koyukon as a language has decreased in the younger generations and in the mid-1960's it was estimated that few Koyukon below the age of 20 could carry on a conversation in their indigenous language (Lowens 1966: 235). Likewise, Catherine Attla has expressed concern that due to influences of Western culture, the younger generations will not know their own history. She writes that she is skeptical about whether or not the young will understand or recognize their own culture, where they lived, how they got food, and other things the Koyukon traditionally did (Attla 1995: xiv). Thus, we can see an emerging pattern which depicts a disparity between the younger generation, who have been exposed to non-Native school systems, electronic media, and depend on wage labor, and the older generations, who depend on the land and traditional canons of life. The younger generation is less dependent on subsistence strategies and do not actively use them. They have a tendency to share with fewer people, which is perceived as selfish and a reflection of poor hunting skills when seen through the eyes of the elders (Easton 2001: 116, 109). An elder was once quoted as saying, "they [white people] destroyed our culture," (Easton 2001: 111). Today, the Koyukon experience economic hardships, high costs, uncertainty, and a rift between the older and younger generation which threaten the traditional culture and weaken the shared environmental identity.

#### *Threats from Climate Change*

When Western people think about Native Americans and their relationship to the environment, they tend to idolize and romanticize them. Western society tends to depict Native Americans as "noble" and "pure," instead of as "regular people". This results in a tendency to judge them against the ideal of the Native American as "natural ecologists and conservationists" which is entirely problematic. While Native Americans have lived off the land successfully for thousands of years, and while the land has remained largely undamaged by this continual use, it is evident that Native Americans like Westerners

have at times overhunted, overgrazed, or otherwise exploited/abused their natural resources (Aftandilian 2011: 221). However, Native Americans do follow certain ethics that relate to proper treatment of the environment as we have seen through the Koyukon environmental identity. This ethic links the environment to individuals spiritually and emotionally, creating a distinct relationship to natural surroundings.

Examples of this conservation ethic are exemplified by the Koyukon. For instance, Nelson writes that “Boreal forest animals are elusive, thinly dispersed, and only periodically abundant. They are also sensitive to overexploitation, and their persistence into the present era reflects the moderation with which they have been used by the Koyukon,” (Nelson 1983: 220). When game is abundant, the Koyukon tend to shrink the size of the territories they hunt, allowing other areas to repopulate. Likewise, a main tenet of the environmental identity is that one may not waste anything given from nature, if one does not properly respect the gift of the animal bad luck or illness may result as punishment. Similarly, the environmental identity emphasizes a communitarian relationship, in which a sense of duty is felt towards the environment because the Koyukon realize that they are sharing a community with spiritual and other living beings, and thus need to be respectful of the area (Nelson 1983: 225, 230). This respect manifests itself in taboos and hunting ethics such as restrictions of what animals they hunt, how much food they harvest, etc. However, this does not mean that they do not exploit their environment or rely on modern technology –the Koyukon and other Native tribes depend on the use of guns, snowmobiles, and other technology for successful hunts. Yet, this respect *does* indicate that they adapt to new conditions without abandoning traditional values or forgetting to respect the environment upon which they survive (Aftandilian 2011:226). This connectedness with nonhuman life is depicted in stark contrast to Western values which tend to treat the environment as if it were “numb to our presence and blind to our behavior,” (Nelson 1993: 106).

However, this environmental conservationist ethic has done little good in the face of impending climate change. Global warming and effects from dangerous greenhouse gases have been detrimental to traditional ways of life and have had a profound impact upon the Koyukon environmental identity. Climate change has brought extreme weather to the Koyukon region and has created dangerous flooding, damaging coastline erosion, increased forest fires, and higher levels of mercury in food that will have huge impacts upon food harvests and the availability of subsistence resources. These extreme events are often believed to be not simply changes in the environment or climate, but rather caused by the design and consciousness of spiritual forces, acting in retribution of human actions (Natcher, et al. 2007: 114). Furthermore, the Koyukon are completely vulnerable to these events, due to their reliance on natural resources, their location, and their outlook on future action. The Koyukon believe that planning for the future can be presumptuous and spiritually dangerous. This is because it demonstrates a sense of arrogance towards the spiritual world which has ultimate control over the unknowable future. This belief likely developed due to a more predominant need to concentrate on the present (as subsistence production depends more upon current events than on future outlooks). Hence, planning becomes nigh impossible because it is “considered inappropriate to speak publicly of sentient forces lest they hear and take offense,” (Natcher et al. 2007). Failure to observe these morals may place one in danger. Thus, it becomes near impossible to discuss plans of action for future events (Natcher et al. 2007: 119, 120). However, given today’s grim situation, the Koyukon have begun to modify this traditional outlook: beginning to plan for future action, an essential change if they wish to salvage their culture.



Image 2: Koyukuk River

Today the three major villages in which the majority of the Koyukon live are in imminent danger. According to a United States Government Accountability Office Report, growing impacts of climate change in Alaska which include melting polar ice, increasing storm intensity, and coastal flooding, are creating threatening situations to several Alaskan Native villages. The Alaska Native Villages report states that “while villages on Alaska’s shorelines and river banks provide Alaska Natives with access to food, transportation, and recreational and cultural benefits, these locations also present dangers to the inhabitants. In particular, these dangers include flooding,...” (USGAO 2009: 2-3). Government reports have recorded 228 flooding events since 1978, 119 of which occurred in different Alaskan communities, 40% of floods occurring from 2000 to 2008. Melting permafrost causes shorelines and riverbanks to erode, creating threats to homes and other buildings. Higher temperatures are causing sea ice to thin and changing melting patterns. The loss of this sea ice makes shorelines more vulnerable to storm surges and heavy waves which further accelerates erosion. It also disrupts hunting practices and no longer aligns with traditional knowledge about sea ice formation (USGAO 2009: 6-7). Due to these dire circumstances, 31 villages have now been identified as being imminently threatened by flooding and erosion including Koyukuk and Nulato, creating the need for relocation. Another eight villages have been identified as likely needing to relocate to a safer location over time, including Huslia. However, the full extent of the threat to villages remains unknown (USGAO 2009: 12, 17, 42). Both Nulato and Koyukuk

have been declared disaster areas and need to be relocated due to intense flooding. Currently, both Huslia and Nulato have begun moving structures or building new structures on elevated sites, but Koyukuk remains at a stand-still, (USGAO 2009: 17, 35-36). Due to inadequacy of federal agencies, help remains distant and it is unlikely that villages with the highest priority for assistance will get the proper assistance that is needed. And as time passes, the potential for disaster increases, as does the overall cost of relocation (which the villages can't afford anyway). Likewise, responding to disasters during emergency situations is likely to result in rushed decisions and solutions that may be detrimental to the villages and damaging to the environment (USGAO 2009: 36, 42).

Due to these extreme events and the urgent but unavailable need to relocate, the Koyukon environmental identity is being threatened. Climate change threatens the environmental identity by completely altering the landscape. Permafrost and strong waves are causing coastal erosion which is limiting access to fishing grounds, changing migration patterns of wildlife, and driving the Koyukon out of their traditional homeland. Watson & Huntington suggest how the removal from a traditional landscape could be irreversibly damaging for the Indigenous populations, writing, "the Koyukon landscape is a space that inspires respect for the people and animals who grew up there, from the presence of their camps and habitats, from the 'onto-story' associated with the places where the human confronts the opportunity of the animals' gifts" (Watson & Huntington 2009: 274). With the threat of displacement, the key features of the environmental identity – that of traditional hunting and subsistence strategies—are in imminent danger. The Koyukon cannot simply pick up and move – the history of their people and ancestors lie in these lands, as does the history of the wildlife they depend upon.

### *Conclusion*

Throughout this paper, I have demonstrated how Koyukon Indians depend upon their environment to define their shared cultural identity. This identity is determined largely by the spiritual

relationship they share with the natural world: one of reciprocity, awareness, and respect. I have illustrated that this environmental identity is rooted within the Distant Time stories which explain the sentient world that resides within the environment and the complex, interdependent relationship that humans share with this spiritual world. Furthermore, I have demonstrated how this environmental identity is threatened by the imposition of Western culture as well as by effects driven by climate change. Within the historical period, acculturation and the imposition of Catholicism negatively impacted the understanding and adherence to the traditional spiritual world, creating a rift between the younger and older generations. While there has been some revival of the traditional culture, the environmental identity has been transformed and is threatened by the declining rates of subsistence strategies which are no longer needed for survival. Climate change further threatens the environmental identity by causing irreversible changes to the landscape, changing animal migration patterns, contaminating food resources, reducing access to food, and forcing the Koyukon to relocate their traditional homeland. These changes will have a profound effect upon the Koyukon people and their environmental identity. It is too early to estimate how drastically this shared identity will be altered, but we can be sure that it will.

### *Bibliography*

- Aftandilian, D. 2011. What Other Americans Can and Cannot learn from Native American Environmental Ethics. *Worldviews: Environment, Culture, and Religion* 15(3): 219-246.
- Attla, Catherine, and Eliza Jones. 1996. *Bekk'aatugh Ts'uhuney = Stories We Live By: Traditional Koyukon Athabaskan Stories*. Fairbanks: Yukon Koyukuk School District and Alaska Native Language Center.
- Attla, Catherine. 1995. *Sitsiy Yugh noholnik Ts'in' = As My Grandfather Told It*. Nenana, Alaska Alaska Native Language Center.
- Burch Jr., Ernest S. 1979. Indians and Eskimos in North Alaska, 1816-1977: A Study in Changing Ethnic Relations. *Arctic Anthropology* 16(2): 123-151.
- Easton, Norman A. 2001. Intergenerational Differences in Ethnic Identification in Northern Athapaskan Community. *American review of Canadian Studies* 31(1-2): 105-119.
- Hosley, Edward. 1980. The Aboriginal Social Organization of the Pacific Drainage Dene: The Matrilineal Basis. *Arctic Anthropology* 17 (2): 12-16.
- Ingold, Tim. 2006. Rethinking the animate, re-animating thought. *Ethnos: Journal of Anthropology* 71(1): 9-20.
- Loyens, William A. 1966. The Changing Culture of the Nulato Koyukon Indians. PhD dissertation, University of Wisconsin.
- Natcher, David C., Orville Huntington, Henry P. Huntington, F. Stuart III Chapin, and Sarah Fleisher Trainor. 2007. Notions of Time and Sentience: Methodological Considerations for Arctic Climate Change Research. *Arctic Anthropology* 44(2): 113-126.
- Nelson, Richard K. 1983. *Make Prayers to the Raven: a Koyukon View of the Northern Forest*. Chicago: University of Chicago Press.
- Nelson, Richard K. 1993. Understanding Eskimo Science: Traditional Hunter's Insights into the Natural World are Worth Rediscovering. (Learning to Understand the Natural Environment from Those who still Depend Upon it for Their Livelihood). *Audubon* 95(5): 102(6).
- Nuttall, Mark. 1998. *Protecting the Arctic: Indigenous Peoples and Cultural Survival*. Oxon: The Gordon and Breach Publishing Group.
- U.S. Government Accountability Office. 2009. Alaska native villages: Limited progress has been made on relocating villages threatened by flooding and erosion. Report to Congressional Requesters. GAO-09-551. Washington, D.C.
- Watson, Annette, and Orville Huntington. 2009. They're here—I can feel them: the epistemic space of Indigenous and Western Knowledge. *Social & Cultural Geography* 9(3): 257-281.



Photos:

Image 1: Map of Koyukon Territory <http://www.firstnationsseeker.ca/KoyukonTerritory.GIF> (accessed November 30, 2012).

Image 2: Koyukuk River  
[http://upload.wikimedia.org/wikipedia/commons/2/2d/South\\_Fork\\_of\\_Koyukuk\\_River.jpg](http://upload.wikimedia.org/wikipedia/commons/2/2d/South_Fork_of_Koyukuk_River.jpg) (accessed December 2, 2012)